

**AMENDED PAGES****Claims**

1. Method for production of a semi-finished product made of zirconium alloy containing by weight at least 97% zirconium, intended for the production of flat products, in which an ingot with a diameter between 400 mm and 800 mm and a length between 2 m and 3 m is produced by casting the zirconium alloy, then by forging the ingot the semi-finished product in the form of a slab with a thickness of around 100 mm and intended to be hot rolled then cold rolled to obtain a flat product of a thickness between 0.2 mm and 4 mm is produced, characterised in that the slab (8) is produced from the ingot (1) by a single forging operation at a temperature at which the zirconium alloy is in a state comprising the crystalline  $\alpha$  and  $\beta$  phases of the zirconium alloy.
2. Method as claimed in claim 1, characterised in that at the forging temperature the ingot contains a volume proportion of zirconium alloy in the  $\alpha$  phase between 10% and 90%, the remainder of the zirconium alloy of the ingot being in the  $\beta$  phase.
3. Method as claimed in claim 1 or claim 2, characterised in that the forging of the zirconium alloy in the  $\alpha$  and  $\beta$  phase is performed at a temperature between 850°C and 950°C.
4. Method as claimed in any of claims 1 to 3, characterised in that the zirconium alloy contains at least 3% by weight in total of the additive elements comprising at least one of the elements tin, iron, chromium, nickel, oxygen, niobium, vanadium and silicon, the remainder of the alloy being constituted by zirconium with the exception of the inevitable impurities.
5. Use of the method as claimed in any of claims 1 to 4 for production of a slab intended for the production of a flat product of a thickness between 0.2 mm and 4 mm for the manufacture of a nuclear fuel assembly such as a plate for a spacer grid for a fuel assembly for a PWR reactor or a wall of a housing of a

fuel assembly for a BWR reactor or a fuel assembly element for a CANDU reactor.